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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Olson
Serial No.: 09/292,265
Filed: April 15, 1999
For: AUTOMATIC VIDEO MONITORING SYSTEM WHICH SELECTIVELY SAVES INFORMATION

Art Unit: 2613
Examiner: Allen C. Wong
Docket: TI-25771

Appeal Brief under 37 C.F.R. §1.192

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATION OF FAX TRANSMITTAL UNDER 37 C.F.R. §1.6(b)

I hereby certify that the above correspondence is being facsimile transmitted to the Patent and Trademark Office on January 12, 2004.

Robin E. Barnum

Dear Sir:

This is Appellant's Appeal Brief filed pursuant to 37 C.F.R. §1.192 and the Notice of Appeal filed November 10, 2003. This Appeal Brief is timely under 37 C.F.R. §1.7 because January 10, 2004, is a Saturday and the transmission date of this Appeal Brief under 37 C.F.R. §1.8 is the next following day that is not a Saturday, Sunday or Federal Holiday.

Real Party in Interest under 36 C.F.R. §1.192(c)(1)

The real party in interest in this application is Texas Instruments Incorporated, a corporation of Delaware with its principle place of business in Dallas, Texas. An assignment to

Texas Instruments Incorporated is recorded at reel 9915 and frames 0408 and 0409.

Related Appeals and Interferences under 36 C.F.R. §1.192(c)(2)

There are no appeals or interferences related to this appeal in this application.

Status of the Claims on Appeal under 37 C.F.R. §1.192(c)(3)

Claims 1, 3 to 6, 9 to 12, 15 to 17, 22, 25, 27, 29, 40 to 43, 46 to 49, 52 to 54 and 56 are finally rejected. Claims 2, 7, 8, 13, 14, 18 to 21, 23, 24, 26, 28, 30 to 39, 44, 45, 50, 51 and 55 are canceled. No claims are allowed.

Status of Amendments Filed After Final Rejection under 37 C.F.R. §1.192(c)(4)

No amendments to the claims were proposed in the response after FINAL REJECTION filed September 29, 2003.

Summary of the Invention under 37 C.F.R. §1.192(c)(5)

This invention is an apparatus and method for monitoring an area. A detector periodically detects an image of the area. An image processing section operates on the detected image. It identifies and tracks a moving object in a succession of the detected images. It automatically selects a portion of a single image of the succession of detected images for each identified object utilizing a predetermined selection criteria. The image processing section saves the selected portion of the single image of the succession of detected images for each identified object and discards other detected images for each identified object.

The invention includes numerous alternative image selection criteria. A first alternative attempts to select an image of a face which is visible and large. The image processor may form a

bounding box surrounding any change region in the image and discard images in which a lowermost side of the bounding box is higher than in other images of the set and select images in which the bounding box is larger than other images. The image processor may select a current image if a lowermost point of a detected change region is lower than in a prior image. The image processor may select a current image over a prior image if a detected change region is larger than a prior image.

There are numerous alternative techniques to confirm image selection. The image processor may confirm selection upon the absence of a previously detected object. The image processor may confirm selection when an object remains within a predefined region of the area for a specified time interval. The image processor may confirm selection when a previously moving object becomes stationary. The image processor may confirm selection when a previously stationary object starts moving.

There are numerous alternative techniques for limiting the image data saved. The image processor may form a bounding box subset of the image just large enough to completely contain a detected object and saves the portion of image corresponding to the bounding box. The image processor may save a reference image at a first resolution and save the bounding box at a higher resolution.

This invention provides techniques for display of the saved images. In a first technique, the image processor saves save one of the detected images as a reference image at a first resolution and save the bounding box at higher first resolution. A display device displays the reference image and the bounding box at the first resolution and separately displays the bounding box at the higher resolution. In a second technique, the image processor tracks moving objects and automatically saves a series of Cartesian coordinate pairs identifying the path of each object. In this second alternative, the image processor may detect events

associated with each detected object and display the reference image, the path of the object within the reference image and an identification of the event on the reference image at a location corresponding to the location of the event.

Statement of Issues Presented for Review under 37 C.F.R. §1.192(c)(6)

(1) Are claims 1, 3 to 6, 9 to 12, 15 to 17, 22, 25, 29 and 40 to 43, 46 to 49 and 52 to 54 made obvious under 35 U.S.C. 103(a) by the combination of Seeley et al U.S. Patent No. 6,069,655, Gorr et al U.S. Patent No. 5,961,571 and Williams et al U.S. Patent No. 5,425,139?

(2) Are claims 27 and 56 made obvious under 35 U.S.C. 103(a) by the combination of Seeley et al U.S. Patent No. 6,069,655, Gorr et al U.S. Patent No. 5,961,571, Williams et al U.S. Patent No. 5,425,139 and Baxter U.S. Patent No. 5,966,074?

Statement of the Grouping of Claims under 37 C.F.R. §1.192(c)(7)

The Applicants respectfully submit that the claims of this application are independently patentable in the following groups:

Group I	claims 1 and 22;
Group II	claims 3 and 40;
Group III	claims 4 and 41;
Group IV	claims 5 and 42;
Group V	claims 6 and 43;
Group VI	claims 9 and 46;
Group VII	claims 10 and 47;
Group VIII	claims 11 and 48;
Group IX	claims 12 and 49;
Group X	claims 15 and 52;
Group XI	claims 16 and 53;
Group XII	claims 17 and 54;

Group XIII claims 25 and 29; and

Group XIV claims 27 and 56.

This Appeal Brief includes separate arguments for each of these groups. In accordance with the procedure sanctioned in MPEP §1206(5) the Appellant respectfully submits these separate arguments fulfill the requirement of 37 C.F.R. §1.192(c)(6) for statement of the reason why the claims are believed separately patentable.

Arguments

Rejection (1)

Group I

Claims 1 and 22 recite subject matter not disclosed in the combination of Seeley et al, Gorr et al and Williams et al. Claim 1 recites "automatically selecting a portion of a single image of the succession of detected images for each identified moving object using selection criteria." Claim 22 similarly recites the image processing section is operative to "automatically select a portion of a single image of the succession of detected images for each identified object utilizing selection criteria." This selection of a portion of one of the detected images is taught in the application at page 13, lines 19 to 29.

The FINAL REJECTION states at page 3, lines 5 to 10 that Seeley et al teaches:

> "automatically select a single image of each identified object utilizing selection criteria (col.10, lines 19-31; Seeley discloses the selection of the identifying object information by using selection criteria, panning, tilting, or zooming into the identifying information in an event of interest; also note log or list of the saved identifying information is generated);"

The cited portion of Seeley et al (column 10, lines 19 to 31) states:

> "When viewing of one scene is completed, another camera is selected by the operator or CAC. SCU 12 accordingly suspends detection from the newly selected camera, and places the previously selected camera back into its surveillance mode. For the selected camera the operator or CAC is free to pan, tilt or zoom the camera to obtain a better view of the scene, or a portion of a scene which is of interest. As part of the tour, selected cameras may be required (preprogrammed) to view particular areas of the premise which are of interest. The CAC generates and maintains a log for each tour containing information as to when performed, cameras used, operator notes, etc."

The Applicant respectfully submits that the panning, tilting or zooming a selected camera taught in this portion of Seeley et al fails to disclose or make obvious automatic selection of a portion of an image including an identified object. In particular, this portion of Seeley et al fails to mention selection of a portion of an image. Instead Seeley et al teaches control of the whole image via panning, tilting and zooming. Further, the cited portion of Seeley et al fails to teach any selection made by such panning, tilting or zooming includes a detected object as recited in claims 1 and 22. The Examiner has cited no portions of Gorr et al or Williams et al as making this limitation obvious. Accordingly, claims 1 and 22 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Claims 1 and 22 recite further subject matter not disclosed in the combination of Seeley et al, Gorr et al and Williams et al. Claim 1 recites "saving the selected portion of the single image of the succession of detected images for each identified object." Claim 22 similarly recites the image processing section is operative to "save the selected portion of the single image of the succession of detected images for each identified object." The

FINAL REJECTION states at page 2, lines 11 to 15 that Seeley et al teaches:

> "save the selected image of each identified object (col. 15, lines 24-30; Seeley discloses the selection of image information from the detected images; further, Seeley discloses the storing or saving of the image information into picture buffer 40 of figure 7)"

The cited portion of Seeley et al (column 15, lines 24 to 30) states:

> "Upon request by the operator, "thumbnails," or abbreviated snapshots are transmitted to a workstation 106 at the central station where they can be arranged in a mosaic pattern by the operator for his or her viewing. After viewing the thumbnails, the operator can select one or more of the images for transmission from SCU 12 to the system control."

The Applicant respectfully submits that the selected thumbnail of this part of Seeley et al is not taught as the automatically selected image. Note that the FINAL REJECTION cites a different operation of Seeley et al as allegedly making obvious the selected image. The recitations of claims 1 and 22 require saving the portion of the single image for each identified object. The Applicant respectfully submits that the thumbnails disclosed in Seeley et al are not the claimed portion of a detected image. Additionally, the thumbnails disclosed in Seeley et al are not taught as corresponding to detected objects as claimed. Lastly, Seeley et al includes no teaching that the saved thumbnail is the image supposedly automatically identified as taught at column 10, lines 19 to 31. Claims 1 and 22 require the saved images to be the automatically identified images. The Examiner has cited no portions of Gorr et al or Williams et al as making this limitation obvious. Accordingly, claims 1 and 22 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Group II

Claims 3 and 40 recite subject matter not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claim 3 recites the image selection process uses "image selection criteria which are intended to lead to the selection of an image in which the face of a detected person is visible and large." Claim 40 similarly recites that the image processing section is operative to "use image selection criteria which are intended to lead to the selection of an image in which the face of a detected person is visible and large." The FINAL REJECTION at page 5, lines 1 to 10 states:

> "Regarding claims 3-6, 9-12 and 40-43 and 46-49, Seeley discloses the selection criteria to determine what kind of event is the intrusion (col.5, line 58 to col.6, line 2; note Seeley discloses that certain alarm conditions need to be met before indicating the presence of an intruder; col.6, lines 32-41, Seeley discloses saving of the time of intrusion and other historical data; col.11, line 42, Seeley discloses the image is continually or periodically updated). Also, Seeley discloses the selecting of an image that is larger than other images in a set of images (col. 10, lines 19-31; note Seeley discloses that either the operator or the CAC, central alarm computer, can zoom in the camera on the desired object or scene of interest, and when an object is zoomed, a bounding box appears on the object or scene of interest)."

Seeley et al states at column 5, line 58 to column 6, line 2:

> "The system operates on the premise that only the presence of an intruder of a designated class, or an unknown, is of consequence, that everything else which is detected may be ignored, and that other alarm conditions are met. A recognition process is used to differentiate between those objects falling within and without a designated class of objects, so to reduce or substantially eliminate false and unwanted alarms. In most circumstances, the designated class is human, but the differentiation process is to identify a class into which an intruder fits; e.g., human, non-human, and

unknown. However, regardless of the class of interest, for objects falling within a selected class, an indication is given."

Seeley et al states at column 6, lines 32 to 41:

"The VS operates in conjunction with a central alarm computer (CAC) to which an alarm from an AU is reported and at which the intrusion site is identified. The VS receives, logs, and stores all of the video transmitted to the central station (including live video), and provides the video to a workstation (WS) at the central station which is selected by the CAC as being available for use by an operator to view video as well as any associated data relating to the site at which a reported intrusion has occurred. The VS also stores and facilitates retrieval of historical video data for the premise being monitored and for the workstation activities at the time of an intrusion."

The Applicant respectfully submits that neither Seeley et al, Gorr et al nor Williams et al includes any teaching of attempting to detect a "visible and large" image of a person's face. The cited portions of Seeley et al fail to mention a face and likewise fail to mention a large size. Seeley et al fails to make obvious the recited "visible and large" image of a human face. Accordingly, claims 3 and 40 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Group III

Claims 4 and 41 recite subject matter not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claim 4 recites "selecting the selected image for the given change region by discarding images from the set in which a lowermost side of the bounding box is higher than in other images of the set, and by selecting from the remaining images of the set an image in which a size of the bounding box is larger than in the other remaining images of the set." Claim 41 similarly recites that image

processing section is operative to "select the selected image for the given change region by discarding images from the set in which a lowermost side of the bounding box is higher than in other images of the set, and by selecting from the remaining images of the set an image in which a size of the bounding box is larger than in the other remaining images of the set." The FINAL REJECTION cites Seeley column 6, lines 32 to 41, column 11, line 42, column 10, lines 19 to 31 as making obvious this subject matter. The Applicant respectfully submits that neither Seeley et al, Gorr et al nor Williams et al includes any teaching regarding the lowermost side or the size of a bounding box for a given change region. The cited portions of Seeley el al fail to mention bounding boxes or the lowermost sides of bounding boxes. Claims 4 and 41 require the bounding box to be that part of a detected image that just encloses the corresponding change region. The pan, tilt and zoom disclosed in Seeley et al are not such a bounding box. These functions of Seeley et al change the objects within the image and fail to make obvious selecting a part of an image. Neither does this portion of Seeley et al disclose discarding portions of images based upon the position of the lowermost side of a bounding box or the size of the bounding box. Accordingly, claims 4 and 41 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Group IV

Claims 5 and 42 recite subject matter not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claims 5 and 42 recite the automatic selecting uses "image selection criteria which cause a current image to be selected over a prior image if a lowermost point of a detected change region is lower in the current image than in the prior image." The FINAL REJECTION cites Seeley column 6, lines 32 to 41, column 11, line 42, column 10, lines 19 to 31 as making obvious this subject matter. The

cited portions of Seeley et al teach use of alarm conditions, but fail to teach selection of a prior portion of an image over a current portion of an image based upon the portion having the lowermost point of the images recited in claims 5 and 42. The FINAL REJECTION fails to point out any such teaching in the references. Accordingly, claims 5 and 42 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Group V

Claims 6 and 43 recite subject matter not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claims 6 and 43 recite the automatic selecting uses "image selection criteria which cause a current image to be selected over a prior image if a detected change region has increased in size relative to a prior image." The FINAL REJECTION cites Seeley column 6, lines 32 to 41, column 11, line 42, column 10, lines 19 to 31 as making obvious this subject matter. The Applicant respectfully submits that neither Seeley et al, Gorr et al nor Williams el al includes any teaching regarding the size of a detected change region. The cited portions of Seeley et al teach use of alarm conditions, but fail to teach the selection based upon object size recited in claims 6 and 43. Accordingly, claims 6 and 43 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Group VI

Claims 9 and 46 recite subject matter not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claims 9 and 46 recite selection of an image upon "detection of the absence of a previously detected object". The FINAL REJECTION cites Seeley column 6, lines 32 to 41, column 11, line 42, column 10, lines 19 to 31 as making obvious this subject matter. The Applicant respectfully submits that neither Seeley et al, Gorr et

al nor Williams et al includes any teaching regarding the absence of a detected object. The cited portions of Seeley et al teach use of alarm conditions, but fail to teach selection based upon absence of a previously detected moving object recited in claims 9 and 46. Accordingly, claims 9 and 46 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Group VII

Claims 10 and 47 recite events not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claims 10 and 47 recite selection of an image upon detection that "an object has remained within a predefined region of the area for a specified time interval." The FINAL REJECTION cites Seeley column 6, lines 32 to 41, column 11, line 42, column 10, lines 19 to 31 as making obvious this subject matter. While Seeley et al teaches detection of intrusion events within the video sequence, Seeley et al fails to teach the event of an object remaining within a region for a length of time. Accordingly, claims 10 and 47 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Group VIII

Claims 11 and 48 recite events not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claims 11 and 48 recite selection of an image upon "determination that a previously moving object has become stationary." The FINAL REJECTION cites Seeley column 6, lines 32 to 41, column 11, line 42, column 10, lines 19 to 31 as making obvious this subject matter. While Seeley et al teaches detection of intrusion events within the video sequence, Seeley et al fails to teach the event of a moving object stopping. Accordingly, claims 11 and 48 are

allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Group IX

Claims 12 and 49 recite events not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claims 12 and 49 recite selection of an image upon "determination a previously stationary object has started moving." The FINAL REJECTION cites Seeley column 6, lines 32 to 41, column 11, line 42, column 10, lines 19 to 31 as making obvious this subject matter. While Seeley et al teaches detection of intrusion events within the video sequence, Seeley et al fails to teach the event of a stationary object beginning to move. Accordingly, claims 12 and 49 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Group X

Claims 15 and 52 recite subject matter not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claims 15 and 52 recite "bounding box subset of the single image just large enough to completely contain the detected object" and saving "a portion of a detected image corresponding to the bounding box." The FINAL REJECTION states at page 5, line 19 to page 6, line 2:

> "Regarding claims 15 and 52, Seeley discloses the saving of the detected image that corresponds to a bounding box (figure 7, element 40; figures 13-14, element note elements 406a-406n and 506a-506n are video buffers; in col. 10, lines 19-31, Seeley discloses the that either the operator or the CAC, central alarm computer, can zoom in the camera on the desired object or scene of interest, and when an object is zoomed, a bounding box appears on the object or scene of interest)."

This teaching of Seeley et al differs from the recitations of claims 15 and 52 in two ways. This portion of Seeley et al teaches

zooming without teaching that the zoomed display is "just large enough to completely contain the detected object." Seeley et al includes no teaching that the zoom goes to the point that display is just large enough to completely contain the detected object. Seeley et al teaches saving the entire zoomed image without teaching "saving a portion of a detected image corresponding to the bounding box" as recited in claims 15 and 52. Accordingly, claims 15 and 52 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Group XI

Claims 16 and 53 recite subject matter not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claims 16 and 53 recite "saving one of the detected images as a reference image at a first resolution, and wherein said step of saving the selected portion of the single image is carried out by saving the bounding box enclosing the selected portion of the single image at a second resolution which is higher than the first resolution." Respective base claims 15 and 52 recite that this bounding box is "just large enough to completely contain a corresponding detected object." Seeley et al does disclose image data at full resolution and thumbnail or abbreviated snapshots. Seeley et al fails to teach that any image saved is limited to the bounding box enclosing an identified object. The thumbnails disclosed in Seeley et al are reduced resolution images of the snapshots, which are the full camera view. The thumbnails of Seeley et al are not a portion of the image as claimed but the whole image at reduced resolution. Employing the zoom taught in Seeley et al at column 10, lines 19 to 31 would result in both the snapshot and the thumbnail showing the whole zoomed image. Thus the thumbnail cannot be the claimed "selected portion of the single image." Further, Seeley et al teaches that the snapshots are stored. However, Seeley et al never

teaches that the thumbnails are stored. The Applicants respectfully submit that the thumbnails are formed from the snapshots as they are viewed. Lastly, even if the thumbnails are stored, claims 16 and 53 require they be stored at a higher resolution than the snapshots. The FINAL REJECTION states at page 6, lines 5 to 7:

> "(note in figure 8B, the reference image is saved at a first resolution, a thumbnail image with a lower resolution where as in figure 8A, the reference image is saved at higher resolution, at 'full resolution')."

On the contrary, claims 16 and 53 recite that the selected portion of the single image is saved at the higher resolution. This is the opposite relationship than that cited in the FINAL REJECTION. Accordingly, claims 16 and 53 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Group XII

Claims 17 and 54 recite subject matter not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claims 17 and 54 recite "bounding box subset of the single image just large enough to completely contain the detected object" and saving "a portion of a detected image corresponding to the bounding box." The FINAL REJECTION states at page 5, line 19 to page 6, line 2:

> "Regarding claims 15 and 52, Seeley discloses the saving of the detected image that corresponds to a bounding box (figure 7, element 40; figures 13-14, element note elements 406a-406n and 506a-506n are video buffers; in col. 10, lines 19-31, Seeley discloses the that either the operator or the CAC, central alarm computer, can zoom in the camera on the desired object or scene of interest, and when an object is zoomed, a bounding box appears on the object or scene of interest)."

This teaching of Seeley et al differs from the recitations of claims 17 and 54 in two ways. This portion of Seeley et al teaches

zooming without teaching that the zoomed display is "just large enough to completely contain the detected object." Seeley et al includes no teaching that the zoom goes to the point that display is just large enough to completely contain the detected object. Seeley et al teaches saving the entire zoomed image without teaching "saving a portion of a detected image corresponding to the bounding box" as recited in claims 17 and 54. Accordingly, claims 17 and 54 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Claims 17 and 54 recite further subject matter not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claims 17 and 54 recite "saving one of the detected images as a reference image having a first resolution, wherein said step of saving the selected portion of the single image is carried out by determining a bounding box subset of the single image just large enough to completely contain a corresponding detected object and saving at a second resolution the bounding box enclosing the selected portion of the single image, the second resolution being greater than the first resolution." Seeley et al does disclose image data at full resolution and thumbnail or abbreviated snapshots. Seeley et al fails to teach that any image saved is limited to the bounding box enclosing an identified object. The thumbnails disclosed in Seeley et al are reduced resolution images of the snapshots, which are the full camera view. The thumbnails of Seeley et al are not a portion of the image as claimed but the whole image at reduced resolution. Employing the zoom taught in Seeley et al at column 10, lines 19 to 31 would result in both the snapshot and the thumbnail showing the whole zoomed image. Thus the thumbnail cannot be the claimed "selected portion of the single image." Further, Seeley et al teaches that the snapshots are stored. However, Seeley et al never teaches that the thumbnails are stored. The Applicants respectfully submit that the thumbnails

are formed from the snapshots as they are viewed. Lastly, even if the thumbnails are stored, claims 17 and 54 require they be stored at a higher resolution than the snapshots. The FINAL REJECTION states at page 6, lines 5 to 7:

> "(note in figure 8B, the reference image is saved at a first resolution, a thumbnail image with a lower resolution where as in figure 8A, the reference image is saved at higher resolution, at 'full resolution')."

On the contrary, claims 17 and 54 recite that the selected portion of the single image is saved at the higher resolution. This is the opposite relationship than that cited in the FINAL REJECTION. Accordingly, claims 17 and 54 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Claims 17 and 54 recite still further subject matter not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claims 17 and 54 recite "displaying the reference image at the first resolution, displaying the bounding box enclosing the selected image within the reference image at the first resolution, and displaying the bounding box enclosing the selected image separately from the reference image and at the second resolution." This subject matter is described in the application at page 19, lines 24 to 37, page 20, lines 20 to 29 and illustrated in Figure 8. Figure 8 illustrates display of the reference image 111 with the object (person 86) and bounding box 85 overlain on the reference image. Figure 8 also illustrates a separate display 121 of the selected image. Seeley et al does teach display of the same image data in full resolution (snapshot) and in reduced resolution (thumbnail) at Figure 15. However, in Seeley et al both the snapshot and the thumbnail show the entire camera frame. In Seeley et al the thumbnail is not limited to the bounding box enclosing the identified object as required by claims 17 and 54. Claims 17

and 54 recite that the bounding box is displayed at a higher resolution than the reference image, while Seeley et al teaches the thumbnails are displayed at the lower resolution. Seeley et al also fails to teach that the bounding box is displayed within the reference image. Accordingly, claims 17 and 54 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Group XIII

Claims 25 and 29 recite subject matter not disclosed in the combination of Seeley et al, Gorr et al and Williams et al. Claim 25 recites "automatically selecting a portion of a single image of the succession of detected images for each identified moving object using selection criteria." Claim 29 similarly recites the image processing section is operative to "automatically select a portion of a single image of the succession of detected images for each identified object utilizing selection criteria." This selection of a portion of one of the detected images is taught in the application at page 13, lines 19 to 29.

The FINAL REJECTION states at page 3, lines 5 to 10 that Seeley et al teaches:

> "automatically select a single image of each identified object utilizing selection criteria (col.10, lines 19-31; Seeley discloses the selection of the identifying object information by using selection criteria, panning, tilting, or zooming into the identifying information in an event of interest; also note log or list of the saved identifying information is generated);"

The cited portion of Seeley et al (column 10, lines 19 to 31) states:

> "When viewing of one scene is completed, another camera is selected by the operator or CAC. SCU 12 accordingly suspends detection from the newly selected camera, and places the

> previously selected camera back into its surveillance mode. For the selected camera the operator or CAC is free to pan, tilt or zoom the camera to obtain a better view of the scene, or a portion of a scene which is of interest. As part of the tour, selected cameras may be required (preprogrammed) to view particular areas of the premise which are of interest. The CAC generates and maintains a log for each tour containing information as to when performed, cameras used, operator notes, etc."

The Applicant respectfully submits that the panning, tilting or zooming a selected camera taught in this portion of Seeley et al fails to disclose or make obvious automatic selection of a portion of an image including an identified object. In particular, this portion of Seeley et al fails to mention selection of a portion of an image. Instead Seeley et al teaches control of the whole image via panning, tilting and zooming. Further, the cited portion of Seeley et al fails to teach any selection made by such panning, tilting or zooming includes a detected object as recited in claims 25 and 29. The Examiner has cited no portions of Gorr et al or Williams et al as making this limitation obvious. Accordingly, claims 25 and 29 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Claims 25 and 29 recite further subject matter not disclosed in the combination of Seeley et al, Gorr et al and Williams et al. Claim 25 recites "saving the selected portion of the single image of the succession of detected images for each identified object." Claim 29 similarly recites the image processing section is operative to "save the selected portion of the single image of the succession of detected images for each identified object." The FINAL REJECTION states at page 2, lines 11 to 15 that Seeley et al teaches:

> "save the selected image of each identified object (col. 15, lines 24-30; Seeley discloses the selection of image information from the detected images; further, Seeley

discloses the storing or saving of the image information into picture buffer 40 of figure 7)".

The cited portion of Seeley et al (column 15, lines 24 to 30) states:

> "Upon request by the operator, "thumbnails," or abbreviated snapshots are transmitted to a workstation 106 at the central station where they can be arranged in a mosaic pattern by the operator for his or her viewing. After viewing the thumbnails, the operator can select one or more of the images for transmission from SCU 12 to the system control."

The Applicant respectfully submits that the selected thumbnail of this part of Seeley et al is not taught as the automatically selected image. Note that the FINAL REJECTION cites a different operation of Seeley et al as allegedly making obvious the selected image. The recitations of claim 25 and 29 require saving the portion of the single image for each identified object. The Applicant respectfully submits that the thumbnails disclosed in Seeley et al are not the claimed portion of a detected image. Additionally, the thumbnails disclosed in Seeley et al are not taught as corresponding to detected objects as claimed. Lastly, Seeley et al includes no teaching that the saved thumbnail is the image supposedly automatically identified as taught at column 10, lines 19 to 31. Claims 25 and 29 require the saved images to be the automatically identified images. The Examiner has cited no portions of Gorr et al or Williams et al as making this limitation obvious. Accordingly, claims 25 and 29 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Claims 25 and 29 recite still further subject matter not made obvious by the combination of Seeley et al, Gorr et al and Williams et al. Claim 25 recites "automatically saving a series of Cartesian coordinate pairs which identifies the path of movement of the object, said information being retained after the object is no

longer present in newly detected images." Claim 29 similarly recites the image processing section operates to "automatically save a series of Cartesian coordinate pairs which identifies the path of movement of the object, and to retain the information after the object ceases to be present in current detected images." This subject matter is disclosed in the application at page 17, lines 32 and 33. The Applicant respectfully submits that Seeley et al fails to teach saving this series of Cartesian coordinate pairs. The FINAL REJECTION states at page 4, lines 9 to 20:

> "Although Seeley and Gorr does not specifically teach the use of a series of Cartesian coordinate pairs for identifying the object's movement path, however, Williams teaches the use of a series of Cartesian coordinate pairs for identifying the object's movement path (see fig. 1 and 7, also see claim 1; Williams discloses that the object can be displayed on a Cartesian coordinate plane, where (0,0), (200,0), (0,200) and (200,200) are Cartesian coordinates that are the vertices of the Cartesian coordinate plane). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of Seeley, Gorr and Williams for permitting the computation, identification, storage and display of the objects in the Cartesian coordinate plane so as to clearly identify the objects at their specific locations. Doing so would convey accurate, precise detailed description of the moving objects' trajectory for reporting intrusion scenes."

Even a cursory reading of Williams et al reveals this reference teaches a different technique than claimed in claims 25 and 29. Claims 25 and 29 recite detecting an object in a video image, tracking that object and storing Cartesian coordinate pairs identifying the detected path of movement. Williams et al teaches an opposite technique. Williams et al teaches storing a path as a set of Cartesian coordinate pairs and then moving a computer generated display object along the thus identified path. Williams et al includes no teaching regarding storing the coordinates of a detected moving object as recited in claims 25 and 29.

Accordingly, claims 25 and 29 are allowable over the combination of Seeley et al, Gorr et al and Williams et al.

Rejection (2)

Group XIV

Claims 27 and 56 recite subject matter not made obvious by the combination of Seeley et al, Gorr et al, Williams et al and Baxter. Claims 27 and 56 recite saving "an identification of an event associated with the detected object." Claim 27 recites "displaying on the reference image the identification of the event at a location on the reference image corresponding to a location of the event." Claim 56 similarly recites "display via said display device said reference image...and said identification of said event on said reference image at a location on the reference image corresponding to a location of the event." This subject matter is disclosed in the application at page 20, lines 7 to 19 and illustrated in Figure 8. Note the ENTER label 116 and EXIT label 117 in Figure 8 are in locations corresponding to the object location upon detection of the events. The FINAL REJECTION cites column 10, lines 28 to 31 and element 602 of Figure 15 of Seeley et al as allegedly making obvious the claimed display of events. The display 602 of Seeley et al illustrated in Figure 15 fails to show the display of events at object locations on a reference image as recited in claims 27 and 56. Neither Seeley et al, Gorr et al, Williams et al nor Baxter include any teaching regarding display of event labels on a reference image at a location on the reference image corresponding to a location of the event. Thus claims 27 and 56 are allowable over the combination of Seeley et al. Gorr et al, Williams et al and Baxter.

If the Examiner has any questions or other correspondence regarding this application, Applicants request that the Examiner contact Applicants' attorney at the below listed telephone number and address to facilitate prosecution.

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APPENDIX

CLAIMS ON APPEAL

1. (Previously Amended) A method of monitoring an area, comprising the steps of:

periodically detecting an image of the area;

identifying and tracking a moving object in a succession of the detected images;

automatically selecting a portion of a single image of the succession of detected images for each identified moving object using selection criteria;

saving the selected portion of the single image of the succession of detected images for each identified object; and

discarding and not saving detected images of the succession of the detected images other than said single image of each identified object.

3. (Original) A method according to Claim 1, wherein said step of automatically selecting is carried out by using image selection criteria which are intended to lead to the selection of an image in which the face of a detected person is visible and large.

4. (Previously Amended) A method according to Claim 3, wherein said step of automatically selecting includes the steps of:

saving one of the detected images as a reference image;

carrying out said step of identifying by evaluating images detected subsequent to the reference image in order to identify therein each change region where the evaluated image differs from the reference image;

determining a bounding box subset of the single image for a given change region in each image of a set of images in which the given change region appears; and

selecting the selected portion of the single image for the given change region by discarding images from the set in which a lowermost side of the bounding box is higher than in other images of the set, and by selecting from the remaining images of the set an image in which a size of the bounding box is larger than in the other remaining images of the set.

5. (Original) A method according to Claim 1, wherein said step of automatically selecting is carried out using image selection criteria which cause a current image to be selected over a prior image if a lowermost point of a detected change region is lower in the current image than in the prior image.

6. (Original) A method according to Claim 5, wherein said step of automatically selecting is carried out using image selection criteria which cause a current image to be selected over a prior image if a detected change region has increased in size relative to a prior image.

9. (Previously Amended) A method according to Claim 1, wherein said selecting step is carried out in response to detection of the absence of a previously detected object.

10. (Previously Amended) A method according to Claim 1, wherein said selecting step is carried out in response to detection of a situation in which an object has remained within a predefined region of the area for a specified time interval.

11. (Previously Amended) A method according to Claim 1, wherein said selecting step is carried out in response to a determination that a previously moving object has become stationary.

12. (Previously Amended) A method according to Claim 1, wherein said selecting step is carried out in response to a determination a previously stationary object has started moving.

15. (Previously Amended) A method according to Claim 1, wherein said saving step is carried out by determining a bounding box subset of the single image just large enough to completely contain a corresponding detected object and saving a portion of a detected image corresponding to the bounding box.

16. (Previously Amended) A method according to Claim 15, including the step of saving one of the detected images as a reference image at a first resolution, and wherein said step of saving the selected portion of the single image is carried out by saving the bounding box enclosing the selected portion of the single image at a second resolution which is higher than the first resolution.

17. (Previously Amended) A method according to Claim 1, including the step of saving one of the detected images as a reference image having a first resolution, wherein said step of saving the selected portion of the single image is carried out by determining a bounding box subset of the single image just large enough to completely contain a corresponding detected object and saving at a second resolution the bounding box enclosing the selected portion of the single image, the second resolution being greater than the first resolution, and including the step of

displaying the reference image at the first resolution, displaying the bounding box enclosing the selected portion of the single image within the reference image at the first resolution, and displaying the bounding box enclosing the selected portion of the single image separately from the reference image and at the second resolution.

22. (Previously Amended) An apparatus for monitoring an area, comprising:

a detector which is operative to periodically detect an image of the area; and

an image processing section which is responsive to the detector, said image processing section being operative to:

identify and track a moving object in a succession of the detected images;

automatically select a portion of a single image of the succession of detected images for each identified object utilizing selection criteria;

save the selected portion of the single image of the succession of detected images for each identified object; and

discard and not save detected images other than said single image of the succession of detected images for each identified object.

25. (Previously Amended) A method of monitoring an area, comprising the steps of:

periodically detecting an image of the area;

identifying and tracking a moving object in a succession of the detected images;

automatically selecting a portion of single image of the succession of detected images for each identified object using selection criteria;

saving the selected portion of the single image of the succession of detected images for each identified object; and

discarding and not saving detected images other than said single image of the succession of detected images for each identified object; and

automatically saving a series of Cartesian coordinate pairs which identifies the path of movement of the object, said information being retained after the object is no longer present in newly detected images.

27. (Previously Amended) A method according to Claim 25, including the steps of saving an identification of an event associated with the detected object, saving one of the detected images as a reference image, displaying the reference image, displaying on the reference image the path of movement of the object, and displaying on the reference image the identification of the event at a location on the reference image corresponding to a location of the event.

29. (Previously Amended) An apparatus for monitoring an area, comprising:

a detector which is operative to periodically detect an image of the area; and

an image processing section which is responsive to the detector and which is operative to:

identify and track a moving object in a succession of the detected images;

save the selected portion of the single image of the succession of detected images for each identified object; and

discard and not save detected images other than said single image of the succession of detected images for each identified object;

automatically save a series of Cartesian coordinate pairs which identifies the path of movement of each moving object, and to retain the information after the moving object ceases to be present in current detected images.

40. (Previously Added) An apparatus according to Claim 22, wherein:

said image processing section being further operative to:

use image selection criteria which are intended to lead to the selection of an image in which the face of a detected person is visible and large.

41. (Previously Amended) An apparatus according to Claim 40, wherein:

said image processing section being further operative to:

save one of the detected images as a reference image;

identify a moving object by evaluating images detected subsequent to the reference image in order to identify therein each change region where the evaluated image differs from the reference image;

determine a bounding box subset of the selected image for a given change region in each image of a set of images in which the given change region appears; and

select the selected portion of the single image for the given change region by discarding images from the set in which a lowermost side of the bounding box is higher than in other images of the set, and by selecting from the remaining images of the set an image in which a size of the bounding box is larger than in the other remaining images of the set.

42. (Previously Added) An apparatus according to Claim 22, wherein:

said image processing section being further operative to:

automatically select an image using image selection criteria which cause a current image to be selected over a prior image if a lowermost point of a detected change region is lower in the current image than in the prior image.

43. (Previously Added) An apparatus according to Claim 42, wherein:

said image processing section being further operative to:

automatically select an image out using image selection criteria which cause a current image to be selected over a prior image if a detected change region has increased in size relative to a prior image.

46. (Previously Amended) An apparatus according to Claim 22, wherein:

said image processing section being further operative to:

select an image in response to detection of the absence of a previously detected object.

47. (Previously Amended) An apparatus according to Claim 22, wherein:

said image processing section being further operative to:

select an image in response to detection of a situation in which an object has remained within a predefined region of the area for a specified time interval.

48. (Previously Amended) An apparatus according to Claim 22, wherein:

said image processing section being further operative to:

select an image in response to a determination that a previously moving object has become stationary.

49. (Previously Amended) An apparatus according to Claim 22, wherein:

said image processing section being further operative to:

select an image in response to a determination a previously stationary object has started moving.

52. (Previously Amended) An apparatus according to Claim 22, wherein:

said image processing section being further operative to:

save said selected portion of the single image by determining a bounding box subset of the single image just large enough to completely contain a corresponding detected object and saving a portion of a detected image corresponding to the bounding box.

53. (Previously Amended) An apparatus according to Claim 52, wherein:

said image processing section being further operative to:

save one of the detected images as a reference image at a first resolution; and

save the selected portion of the single image by saving a bounding box enclosing the selected portion of the single image at a second resolution which is higher than the first resolution.

54. (Previously Amended) An apparatus according to Claim 22, further comprising:

a display device; and

wherein said image processing section being connected to the display device and being further operative to:

save one of the detected images as a reference image having a first resolution;

save the selected portion of the single image by saving a bounding box subset of the single image enclosing a corresponding detected object at a second resolution which is higher than the first resolution;

display via said display device said reference image at the first resolution and said bounding box enclosing the selected portion of the single image within said reference image at said first resolution, and

display via said display device said bounding box separately from said reference image at said second resolution.

56. (Previously Amended) An apparatus according to Claim 25, further comprising:

a display device;

wherein said image processing section being connected to said display device and being further operative to:

save an identification of an event associated with said detected object;

save one of the detected images as a reference image; and

display via said display device said reference image, said path of movement of the object within said reference image, and said identification of said event on said reference image at a location on the reference image corresponding to a location of the event.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

OFFICIAL

In re the Application of Thomas J. Olson

TI-25771

Art Unit: 2613

Serial No.: 09/292,265

Examiner: Allen C. Wong

Filed: April 15, 1999

Conf. No.: 3301

For: Automatic Video Monitoring System Which Selectively Saves Information

CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that the following papers are being transmitted by facsimile to the U.S. Patent and Trademark Office at **703-872-9306** on the date shown below:

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